Enclosure 2

EPA REGION VIII MONTANA OFFICE TMDL REVIEW FORM

Document Name:	**Water Quality Restoration Plan and Total Maximum Daily Loads for the Ninemile Planning Area (January, 2005)**
Submitted by:	**MTDEQ**
Date Received:	**January 31, 2005**
Review Date:	**February 4, 2005**
Reviewer:	**Ron Steg**
Formal or Informal Review?	**FORMAL**

This document provides a standard format for the EPA Montana Office to provide comments to the Montana Department of Environmental Quality on TMDL documents provided to the EPA for either official formal, or informal review. All TMDL documents are measured against the following 12 review criteria:

1. Water Quality Impairment Status
2. Water Quality Standards
3. Water Quality Targets
4. Significant Sources
5. Total Maximum Daily Load
6. Allocation
7. Margin of Safety and Seasonality
8. Monitoring Strategy
9. Restoration Strategy
10. Public Participation
11. Endangered Species Act Compliance
12. Technical Analysis

Each of the 12 review criteria are described below to provide the rational for the review, followed by EPA's summary and comments/questions. **Comments/questions that need to be addressed are presented in bold**. This review is intended to ensure compliance with the Clean Water Act and also to ensure that the reviewed documents are technically sound and the conclusions are technically defensible.

1. Water Quality Impairment Status

Criterion Description – Water Quality Impairment Status

TMDL documents must include a description of the listed water quality impairments. While the 303(d) list identifies probable causes and sources of water quality impairments, the information contained in the 303(d) list is generally not sufficiently detailed to provide the reader with an adequate understanding of the impairments. TMDL documents should include a thorough description/summary of all available water quality data such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and/or appropriate water quality standards.

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☐ Not a required element in this case. Comments or questions provided for informational purposes.

Referring to Table 3-42 from DEQ's document best summarizes water quality impairment status. A copy of this table is presented below:

Table 3-42. Current Water Quality Impairment Status for the Ninemile TPA.

Waterbody Name and Number	Year Listed	Listed Probable Causes	Current Status	Proposed Action
Big Blue Creek MT76M004-050	1996	Habitat Alterations	Not Impaired	▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Follow-up monitoring.
	2002	No SCD		
Josephine Creek MT76M004-040	1996	Habitat Alterations	Habitat Alteration, Siltation and Flow Alteration	▪ Develop TMDL. ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring.
	2002	No SCD		
Little McCormick Creek MT76M004-080	1996	Habitat Alterations/Flow Alterations	Habitat Alteration, Siltation and Flow Alteration	▪ Develop TMDL ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring.
	2002	No SCD		
Upper McCormick Creek MT76M004-032	1996	Habitat Alterations	Not Impaired	▪ Include in Water Quality Improvement Strategy with lower McCormick and Little McCormick Creeks.
	2002	Full Support (but no SCD for Ag, Industry, Drinking Water, Recreation)		

Table 3-42. Current Water Quality Impairment Status for the Ninemile TPA.

Waterbody Name and Number	Year Listed	Listed Probable Causes	Current Status	Proposed Action
Lower McCormick Creek MT76M004-031	1996	Habitat Alterations	Habitat Alteration, Siltation and Flow Alteration. Possibly elevated temperatures.	▪ Develop TMDL. ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring. ▪ Follow-up temperature monitoring.
	2002	Habitat Alterations		
Kennedy Creek MT76M004-070	1996	Metals and Siltation.	Siltation, Metals and Flow Alteration	▪ Develop TMDLs for Metals and Sediment ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring.
	2002	Dewatering, Flow alteration, Metals (Cu, Pb, Hg, Zn), Other habitat alterations.		
Stony Creek MT76M004-020	1996	Habitat Alterations/Siltation	Habitat Alteration, Siltation and Flow Alteration	▪ Develop TMDL. ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring.
	2002	No SCD		
Cedar Creek MT76M004-060	1996	Habitat Alterations	Habitat Alteration and Siltation	▪ Develop TMDL. ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Follow-up monitoring
	2002	No SCD		
Ninemile Creek MT76N004-010	1996	Habitat Alterations/Siltation	Habitat Alteration, Siltation and Flow Alteration. Possibly elevated temperatures.	▪ Develop TMDL. ▪ Implement Water Quality Improvement Strategy to address identified sources. ▪ Phased approach to flow alteration. ▪ Follow-up monitoring. ▪ Follow-up temperature monitoring.
	2002	Habitat Alterations/Siltation		

2. Water Quality Standards

Criterion Description – Water Quality Standards

The TMDL document must include a description of all applicable water quality standards for all affected jurisdictions. TMDLs result in maintaining and attaining water quality standards. Water quality standards are the basis from which TMDL's are established and the TMDL targets are derived, including the numeric, narrative, use classification, and antidegradation components of the standards.

- ☑ Satisfies Criterion
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The applicable water quality standards are adequately summarized in Section 3.2.

3. Water Quality Targets

Criterion Description – Water Quality Targets

Quantified targets or endpoints must be provided to address each listed pollutant/water body combination. Target values must represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the TMDL target. For pollutants with narrative standards, the narrative standard must be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions, and a measure of biota).

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Targets for Siltation

Siltation targets include:

- Wolman pebble count percent fines less than 6 millimeters (mm) with specific thresholds established for Rosgen stream types based on reference data from the Beaverhead/Deerlodge National Forest in southwestern Montana and the greater Yellowstone area.
- Wolman pebble count "D50" values with specific thresholds established for Rosgen stream types based on reference data from the Beaverhead/Deerlodge National Forest in southwestern Montana and the greater Yellowstone area.
- Riffle Stability Index values for Rosgen B and C channels based on reference data from the Lolo National Forest.
- A macroinvertebrate measure, clinger richness, with a threshold value based on Bollman (1998).

These targets adequately represent both the cold-water fishery and aquatic life beneficial uses. Achievement of these targets should represent attainment of the applicable narrative water quality standards for sediment.

A suite of supplemental indicators was also applied as supporting information in Section 3.0 to verify current water quality impairment status relative to sediment. The supplemental indicators, however, are not used directly as future water quality endpoints in this TMDL.

Comment: It should be noted that Table 3-6 erroneously labels a number of supplemental indicators as targets (i.e., all those shown on page 54).

Targets for Metals

Evaluated metals include copper, lead, mercury and zinc. The targets are presented in Table 4-30 from DEQ's document. A copy is presented below.

Table 4-30. Water Quality Restoration Targets for Metals in Kennedy Creek.

POLLUTANT	TARGET(S) (ug/l)
Copper	5.2 (low flows) 2.9 (high flows)
Lead	1.3 (low flows) 0.5 (high flows)
Zinc	67 (low flows) 37 (high flows)
Mercury	0.05 (all flows)
All metals	No metals concentrations in sediments that may impede beneficial uses. Macroinvertebrate and periphyton communities must show no impairment from metals.

Additionally, two supplemental targets were also suggested:

- Macroinvertebrate and periphyton communities should show no signs of impairment from metals when compared to suitable reference conditions.
- Metals concentrations in fine bed sediments should be below levels that impede aquatic life.

4. Significant Sources

Criterion Description – Significant Sources

TMDLs must consider all significant sources of the stressor of concern. All sources or causes of the stressor must be identified or accounted for in some manner. The detail provided in the source assessment step drives the rigor of the allocation step. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source when the relative load contribution from each source has been estimated. Ideally, therefore, the pollutant load from each significant source should be quantified. This can be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.

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Sediment Sources

Potentially significant sources of sediment identified in the Ninemile TPA included: forest roads, timber harvest, agriculture, mining, culvert failure, fire, and other natural sources. A variety of modeling and assessment techniques were used to quantify/estimate loads from each of these sources.

Metals Sources

Based on current information, potentially significant metals sources include three historic mining complexes; several miles of placer mining dredge piles, and natural sources. A monitoring strategy is proposed to identify other potential metals sources that have yet to be specifically considered in this document.

5. TMDL

Criterion Description – Total Maximum Daily Load

TMDLs include a quantified pollutant reduction target. According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs can be expressed as mass per unit of time, toxicity, % load reduction, or other measure. TMDLs must address, either singly or in combination, each listed pollutant/water body combination.

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TMDLs were prepared for 12 Water Quality Limited Segment (WQLS) /pollutant combinations as follows:

- Big Blue: no TMDL; water body appears to fully support beneficial uses.
- Josephine Creek: 54.8 tons sediment per year, a 92.8% reduction in sediment loading.
- McCormick Creek: 164.5 tons sediment per year, a 92.2% reduction in sediment loading (addresses three separate WQLSs).
- Kennedy Creek: 49.9 tons sediment per year, a 93.8% reduction in sediment loading.
- Kennedy Creek: Copper - 0.0090 lbs/day at low flow and 0.027 lbs/day at high flow.
- Kennedy Creek: Lead – 0.0022 lbs/day at low flow and 0.0046 lbs/day at high flow.
- Kennedy Creek: Zinc – 0.12 lbs/day at low flow and 0.34 lbs/day at high flow.
- Kennedy Creek: Mercury – 0.000086 at low flow and 0.00046 at high flow.
- Stony Creek: 55.9 tons sediment per year, a 28.8% reduction in sediment loading
- Cedar Creek: 55.6 tons sediment per year, a 60.9% reduction in sediment loading
- Ninemile Creek: 2,868 tons sediment per year, a 74.3% reduction in sediment loading

6. Allocation

Criterion Description – Allocation

TMDLs apportion responsibility for taking actions or allocate the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing of responsibility. A performance based allocation approach, where a detailed strategy is articulated for the application of BMPs, may also be appropriate for non point sources.

In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).

Allocating load reductions to specific sources is generally the most contentious and politically sensitive component of the TMDL process. It is also the step in the process where management direction is provided to actually achieve the desired load reductions. In many ways, it is a prioritization of restoration activities that need to occur to restore water quality. For these reasons, every effort should be made to be as detailed as possible and also, to base all conclusions on the best available scientific principles.

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Allocations are as follows:

- Big Blue Creek: No allocation since no TMDL was prepared.
- Josephine Creek: A 92.8% reduction in sediment loading allocated to forest roads and mining.
- McCormick Creek: A 92.2% reduction in sediment loading allocated to forest roads and mining.
- Kennedy Creek: A 93.8% reduction in sediment loading allocated to forest roads and mining; metals loading reductions from mining-related sources sufficient to reduce metals concentrations to below state standards.
- Stony Creek: A 28.8% reduction in sediment loading allocated to forest roads.
- Cedar Creek: A 60.9% reduction in sediment loading allocated to forest roads, agriculture, and timber harvest.
- Ninemile Creek: A 74.3% reduction in sediment loading allocated to forest roads, fire, timber harvest, agriculture, and mining.

7. Margin of Safety and Seasonality

Criterion Description – Margin of Safety/Seasonality

A margin of safety (MOS) is a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body (303(d)(1)(c)). The MOS can be implicitly expressed by incorporating a margin of safety into conservative assumptions used to develop the TMDL. In other cases, the MOS can be built in as a separate component of the TMDL (in this case, quantitatively, a TMDL = WLA + LA + MOS). In all cases, specific documentation describing the rational for the MOS is required.

Seasonal considerations, such as critical flow periods (high flow, low flow), also need to be considered when establishing TMDLs , targets, and allocations.

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The Margin of Safety included:

1. Conservative assumptions in all source load quantification.
2. Metals targets were based on Montana numeric water quality criteria, which contain an inherent MOS. Additional targets based on sediment toxicity, biota measures, and stream bottom deposits are also presented as an additional margin of safety.
3. The suite of proposed supplemental indicators is intended to help verify target compliance and full beneficial use support.
4. The proposed supplemental indicators may also provide an early warning method to identify pollutant-loading threats that may not otherwise be identified.
5. The WQRPs presented in this document go beyond that which is required by the Clean Water Act by including restoration and monitoring for pollution (i.e., habitat alteration and dewatering) and non-listed pollutants (i.e., temperature). This holistic approach provides an additional margin of safety for beneficial use support.
6. A large amount of data and assessment information were considered prior to finalizing any impairment determinations. Impairment determinations were based on conservative assumptions that error on the side of keeping streams listed as impaired and developing TMDLs unless overwhelming evidence of use support was available.

Further, uncertainties associated with targets, source assessment, TMDLs, and allocations were acknowledged throughout the document. These uncertainties are partially addressed by proposed future monitoring in Section 6.0. To the extent that monitoring actually occurs in the future, the proposed monitoring activities would provide an additional margin of safety.

It should be noted that inconsistencies were noted in the document regarding number 3 and 4 above. In Section 3.3 it is stated that supplemental indicators were only used to provide supportive and collaborative evidence, in combination with the targets to verify water quality impairment status. On page 52, it states that: "*The supplemental indicators **WILL NOT** be used directly as water quality goals to measure the success of this water quality restoration plan.*" In numbers 3 and 4 above, it is implied that the supplemental indicators **WILL BE** used in the future to assist with

measuring the success of this water quality restoration plan. Upon reading Section 6.3, it appears that the supplemental indicators **MAY** be used if voluntary monitoring for these parameters is conducted in the future.

Comment: These inconsistencies should be corrected in this document.

Nonetheless, numbers 1, 2, 5 and 6 appear to provide an adequate margin of safety.

Seasonality was addressed by:

- Source load modeling that inherently considered runoff when erosion is greatest.
- Metals targets and TMDLs directly consider high and low flow conditions and metals sampling was conducted during both low and high flow periods.
- The data reviewed and evaluated in this document relative to making impairment determinations covered a wide range of years, seasons, and geographic areas within the Ninemile TPA.

8. Monitoring Strategy

Criterion Description – Monitoring Strategy

Many TMDL's are likely to have significant uncertainty associated with selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL documents to articulate the means by which the TMDL will be evaluated in the field, and to provide supplemental data in the future to address any uncertainties that may exist when the document is prepared.

At a minimum, the monitoring strategy should:

- *Articulate the monitoring hypothesis and explain how the monitoring plan will test it.*
- *Address the relationships between the monitoring plan and the various components of the TMDL (targets, sources, allocations, etc.).*
- *Explain any assumptions used.*
- *Describe monitoring methods.*
- *Define monitoring locations and frequencies, and list the responsible parties.*

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A monitoring strategy is proposed for all water body/pollutant combinations addressing:

- Data gaps in targets and supplemental indicators
- Progress of implementation
- Compliance with targets

Additionally, monitoring is proposed to obtain a better understanding of "reference" conditions and phased monitoring studies are proposed to address potential flow alteration and temperature issues.

9. Restoration Strategy

Criterion Description – Restoration Strategy

At a minimum, sufficient information should be provided in the TMDL document to demonstrate that if the TMDL were implemented, water quality standards would be attained or maintained. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document.

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A restoration strategy is proposed for each of the stream segments for which a TMDL has been prepared. It appears likely that the proposed targets will be met if this restoration strategy is implemented.

10. Public Participation

Criterion Description – Public Participation

The fundamental requirement for public participation is that all stakeholders have an opportunity to be part of the process. Public participation should fit the needs of the particular TMDL.

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Adequate.

11. Technical Analysis

Criterion Description – Technical Analysis

*TMDLs must be supported by an appropriate level of technical analysis. It applies to **all** of the components of a TMDL document. It is vitally important that the technical basis for **all** conclusions be articulated in a manner that is easily understandable and readily apparent to the reader. Of particular importance, the cause and effect relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and allocations needs to be supported by an appropriate level of technical analysis.*

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The level of technical analysis surrounding the water quality impairment status, the targets, TMDLs, and allocations is adequate. The conclusions are sufficiently supported by the available data, supplemental studies, and supporting literature.

12. Endangered Species Act Compliance

Criterion Description – Endangered Species Act Compliance

EPA's approval of a TMDL may constitute an action subject to the provisions of Section 7 of the Endangered Species Act ("ESA"). EPA will consult, as appropriate, with the US Fish and Wildlife Service (USFWS) to determine if there is an effect on listed endangered and threatened species pertaining to EPA's approval of the TMDL. The responsibility to consult with the USFWS lies with EPA and is not a requirement under the Clean Water Act for approving TMDLs. States are encouraged, however, to participate with FWS and EPA in the consultation process and, most importantly, to document in its TMDLs the potential effects (adverse or beneficial) the TMDL may have on listed as well as candidate and proposed species under the ESA.

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The EPA will consult with the US Fish and Wildlife Service under the provisions of Section 7(a)(2) of the ESA regarding its approval of these TMDLs. For now, the approval is contingent upon the outcome of such consultation.